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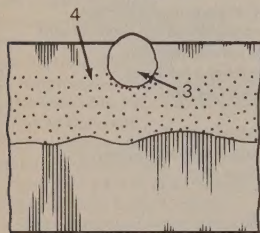


Fig. 1A

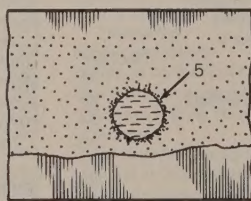


Fig. 1B

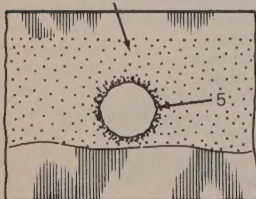


Fig. 1C

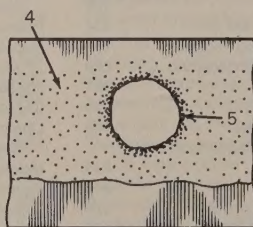


Fig. 1D

Catalyst materials can be applied to the hollow pellet surface before sintering, or by impregnation throughout the shell after sintering. Alternatively catalyst salts can be dissolved in the liquid in the pellet-forming step in which case the catalyst is formed on the inner surface. In another variant, a hole can be formed in the shell to expose the inner surface. Shell porosity is controllable through choice of particle size and sintering conditions.

Blood plasma contaminated with serum hepatitis antigen (HAA) can be purified by reaction with insoluble,

bound hepatitis antibody (BHAB) according to a technique developed by S. E. Charm and B. L. Wong (U.S. 3,896,218, licensing through Research Corp. and Tufts U.). HAA-contaminated blood (10^{13} – 10^{15} particles HAA/ml) can't be accepted for transfusion for well-known reasons. Since "commercial" blood sources are prone to HAA contamination, this source is not as productive as it might be.

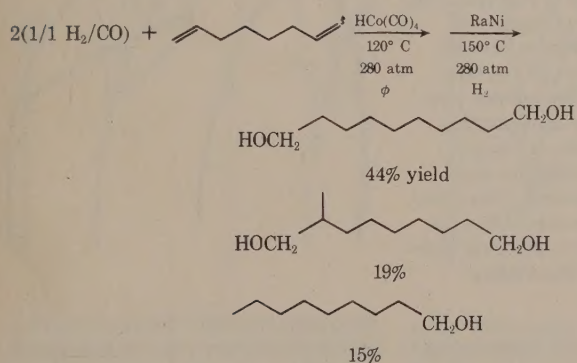
In the Tufts procedure, costly hepatitis antibody is immobilized by reaction with activated agarose or other carbohydrate containing support to form BHAB. HAA is removed from plasma by gently agitating 1 ml BHAB (containing 20 mg of antibody) with 8 ml of HAA containing plasma at 8°C for 26 hr. Afterward the plasma—now containing substantially less than the detectable limit of 10^8 particles/ml—is filtered from the BHAB-HAA complex. The complex is cleaved with an alkaline saline solution yielding BHAB for recycle and a saline HAA solution for concentration, if desired.

Another aspect of the invention concerns the use of BHAB in a more rapid test for HAA in plasma. By use of bound BHAB and modification of a radioimmunoassay test, time can be reduced from days to hours.

The Rubber Division of ACS is to be applauded for its Educational Symposium on carbon black held during its October meeting in New Orleans. It's a pity that such symposia aren't held at National ACS meetings since **much of use** outside the elastomers industry was presented. For example, detailed physical characterization of solids for catalysis, etc. Watching stuff fracture, tear, and oxi-

dize under an electron microscope is pretty exciting. One of the most startling revelations was a technique to masterbatch fine carbon. If it's suspended in "many" volumes of water, mixed (Waring Blendor, in the film), and a little organic monomer mixed in, then like magic—Schlump!—all the solid carbon transfers to the oil phase leaving the water sparkling clear and the carbon well dispersed in the monomer for later incorporation into rubber. The point: Not only is this a neat way to disperse a solid in an oil, but doesn't it also tell us a good deal about **cleaning aqueous streams** of suspended solids? Maybe squirt the resulting oil slurry into the plant boilerhouse? The paper in which this and other widely useful techniques were described can be obtained for a small charge by phoning the Rubber Division's Library at 216-375-7814. Ask for the combined papers "Reinforcement of Elastomers with Carbon Black."

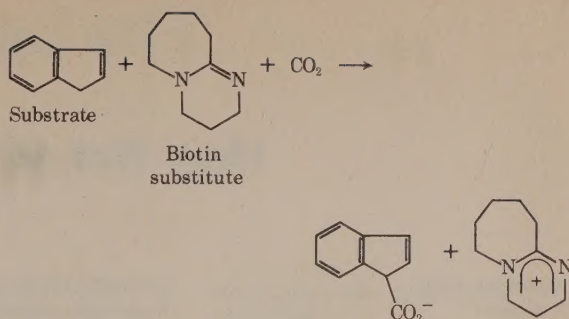
Few reports concerning **dihydroformylation of nonconjugated α,ω -dienes** to linear dialols or diols exist owing to the propensity for by-products from competing isomerization, hydrogenation, and hydroformylation to branched products (cf. Falbe's "Carbon Monoxide Synthesis", 1st ed., p 42). Nevertheless H. J. Nienburg and R. Kummer (BASF) got W. Ger. Ausleg. 2,314,694 for dihydroformylation using preformed $\text{HCo}(\text{CO})_4$.



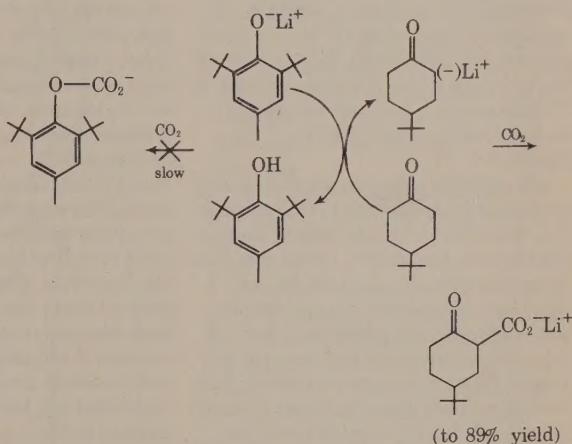
B. Cornils, R. Payer, and K. C. Traenkner (Ruhrchemie) compare [(*Hydrocarbon Proc.*, p 83, June (1975))] the commercial aspects of the various Co- and Rh-based hydroformylation technologies now available. After weighing the pros and cons of using Rh—even in its highly selective applications—they conclude that Rh-based technology "is not more economic than the conventional cobalt oxo process." An excellent list of references is included.

Ashing samples of coal and shale for analysis has been hastened at I.G.T. by using the plasma device offered by International Plasma Corp. (415-489-3030). Obviously useful for other kinds of analytical samples.

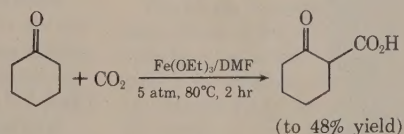
A Japanese group (Haruki, Arakawa, Matsumma, Otsuji, and others) has developed **reagents that mimic the enzymatic carboxylation** [*Chem. Lett.*, 1193 (1973) and 427 (1974)]. A carbodiimide or 1,8-diazabicyclo(5,4,0)-7-undecene is used as the Biotin substitute:



E. J. Corey and R. H. K. Chen [*J. Org. Chem.*, **38**, 4086 (1973)] reported a Li reagent "for carboxylating weakly acidic substances such as ketones by using a base which is sterically protected from attack on carbon dioxide but able to deprotonate the substrate for carboxylation".



Now T. Ito and Y. Takami [*Chem. Lett.*, 1035 (1975)] report the **carboxylation of active methylene catalyzed by ferric ethoxide**:



Initial formation of $\text{Fe}(\text{OEt})_2\text{OCOEt}$ is thought to occur.

Psophocarpus tetragonolobus, the winged bean, may become the soybean of the tropics. It came to the National Academy of Science's attention during a 1974 study of underexploited tropical plants. NAS found it is grown mostly as a backyard crop in Papua, New Guinea, and Southeast Asia. Massive leguminous root nodule systems fix nitrogen for incorporation into plant protein, and the plant parts are remarkable for their high protein content: The edible, immature pods have 2–3% protein; the seeds from mature pods, 30–37% (comparable to soybeans); the tubers, 12 to 15%; and the leaves 6 to 15%. Even the flowers, sometimes eaten in salads, have 6% protein. Happily, most people find the plant parts tasty, according to *Science News*, **108**, 104 (1975).

The Last Word

How Not to Hire a Genius

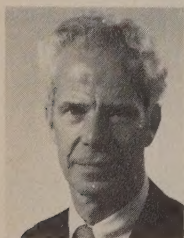
JANUARY 1888

President:

Gentlemen, I called this meeting in connection with an extremely serious matter. Some of you know that I have not been satisfied with the results of our research and development. It seems to me they need some new blood or something, because I haven't seen any new ideas coming out of that place for a long time. If it weren't for good sales results in our established lines, we would be in a damn poor position. We simply have to think of the future. Dick, you are vice-president of R&D how are we doing on this idea of ours to revitalize your group?

R&D V.P.:

J.B., just this morning I received a long letter from our personnel manager. Here it is. You will see that this idea of yours is bearing fruit. Gentlemen, just to bring you up to date, J.B. thought it would be a good idea to scout the great European universities for a revolutionary talent, so we sent our Personnel Manager and Research Director over as emissaries. They have been over there for two months and have finally found a man who has the most outstanding academic record. He is only 23 and already a genius in physics



Vladimir Haensel received his BS in general engineering from Northwestern, his MS in chemical engineering from MIT, and his PhD in chemistry from Northwestern. He then joined UOP whom he's served in many technical and research-oriented positions. He was appointed Vice-President—Science and Technology in 1972, after having served 8 years as vice-president and director of research. Dr. Haensel is best known for his contribution to the development of the "platforming" process for upgrading straight-run gasoline. His work has been recognized by the Perkin Medal for outstanding work in Applied Chemistry, and the National Medal of Science among others. He is a member of the National Academy of Sciences and the National Academy of Engineering.

and math. His name is—I have it right here—Karl August Rudolph Steinmetz, from the University of Breslau in Germany.

President:

Dick, I have been glancing at this letter while you were talking. What is this business about his being a little politically out of step?

R&D V.P.:

That is right, J.B., and I might as well tell you the rest of the bad news. He's also a hunchback, an agnostic, and speaks English poorly. The political viewpoint is not unusual, I am told, particularly among students. Steinmetz became a Socialist about four years ago because he was strongly concerned about Bismarck's suppression of democracy. Our emissaries explored this point and it appears that Steinmetz is to the right of his most moderate Socialist friends. His ideas are thus quite different from the Marxian views that some of you have been alarmed about. The German government is rounding up all opposition, even idealistic Socialists, so I have a hunch that this fellow might be very pleased to come to America. Now about his appearance. Jim wrote "When you talk to him you just don't notice his deformity and bristly beard and shabby clothes."

President:

You fellows don't think we are going to run into any difficulties with some of our church people in the company and in the community on this agnostic bit?

R&D V.P.:

I really don't know, J.B. Maybe we should ask the question right here and now.

Corporate Planning V.P.:

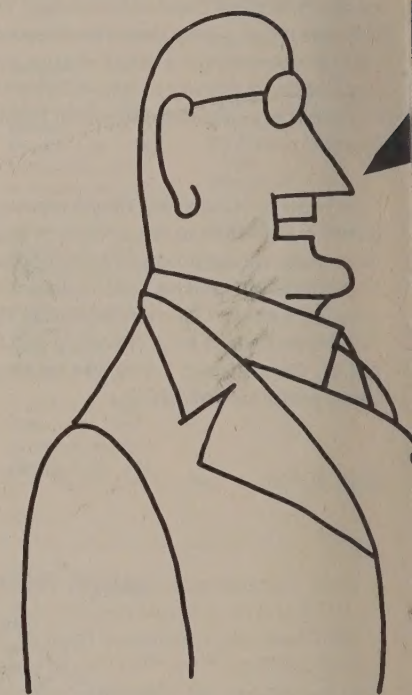
I haven't heard of this plan before. I need time to consider all the ramifications of what you are trying to accomplish. The revolutionary ideas that you mentioned, J.B., how am I going to fit them into our corporate plans if I don't know what they are?

President:

That is not the point, Stan. What we are discussing is, how to get R&D off their you-know-what; the best way is to find somebody who is a real genius in new areas and hire the guy.

Personnel V.P.:

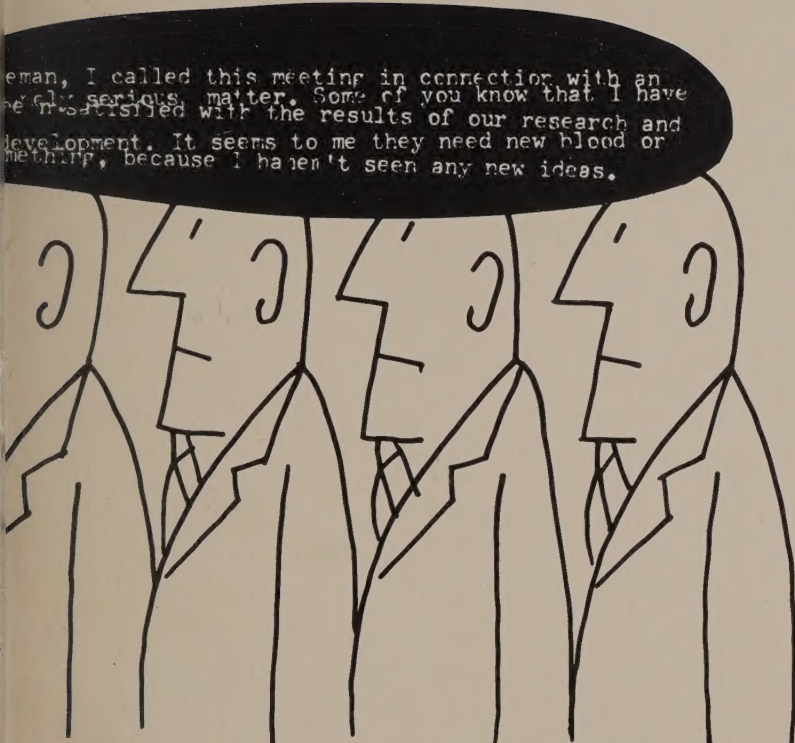
I would like to comment on Dick's question. I am concerned about the bad



news also. I wonder if this Karl August Somebody can pass our medical examination. Our company doctors are getting more and more strict; our insurance people may wish to raise the rate for this special case, and you know, J.B., our rates are high enough already. Also, speaking of doctors, our industrial psychologist is not in general in favor of hiring foreigners—not too adjustable, he says. I also wonder if you can get him into this country with that Socialist and agnostic business. The immigration people can be pretty sticky, you know. But, I suppose with his poor English, he might get by. Seriously though, I am worried about the Socialist part. We have enough trouble with the workers. Why borrow more? Suppose we hire him and he doesn't work out? What are we going to do—ship him back?

President:

It doesn't sound as if you are in favor, Jeff. Look, fellows, I have a finance committee meeting in a few minutes, how many of you think we are taking too big a



man, I called this meeting in connection with an
really serious matter. Some of you know that I have
been dissatisfied with the results of our research and
development. It seems to me they need new blood or
something, because I haven't seen any new ideas.

gamble on this man Steinmetz? Well, it looks as if most of you are opposed. Suppose we have Dick write to our people overseas and tell them to keep looking, but keep this genius on the string for awhile longer, just in case you change your mind as some of you have before. Now, I am not trying to pressure you, but we sure need a genius around here desperately and I've been in this game long enough to know that if you dilly-dally with all your worries you'll lose the guy for sure.

MAY 1888

President:

Now that we have completed our regular business, I would like to hear from Dick about our talent search.

R&D V.P.:

J.B., I have some good news; we have extended offers of employment to two outstanding graduates from Vienna and Oslo and we should hear from them shortly.

President:

That's fine, Dick, but what about that

fellow Karl August Somebody we were going to follow up on?

R&D V.P.:

J.B., I must admit you were right about our fiddling around. After you told me to check with the doctors and the insurance people and then convincing Stan here that we weren't putting a revolutionary amidst our workers—and that wasn't easy—I finally wrote to Jim and Paul telling them to invite Steinmetz for an interview. By the time they returned to Breslau they couldn't find this genius anywhere. The University said he left without graduating and his father didn't know where he was. The last he heard was Switzerland. I guess the police were after him. I suppose we'll have to give up on that genius.

APRIL 1892

President:

Gentlemen, you have just heard our Treasurer's preliminary report on our first quarter of 1892. It was the worst quarter in ten years. It seems to me our competition must have really beefed up their R&D

while we have been standing still. What is our excuse?

Corporate Planning V.P.:

Before Dick answers that, J.B., you spoke of our competition and I just read on the financial page of *The Times* that General Electric has purchased the Eichemeyer firm which specializes in electric motors. The article added it was rumored that the reason GE bought out Eichemeyer was to get the services of some electrical genius named Charles Proteus Steinmetz, who otherwise would not leave Eichemeyer. It seems that Eichemeyer hired this guy right off the street some three years ago.

President:

That name Steinmetz. It sounds strangely familiar. Where did I hear it before?

Secretary:

I saw that article in *The Times* also, Stan. The name seemed familiar to me, too, so I looked through the minutes of our previous meetings. In February and April of 1888 we had a discussion about the possible employment of a man named Karl August Rudolph Steinmetz—a hunchback, a Socialist, and an agnostic but a genius in physics and math. However, nothing came of it. The fellow disappeared.

President:

Thank you, Charles; as usual you are most efficient. But Stan said this Steinmetz is called Charles Proteus. It must be quite a coincidence—the two Steinmetzes. Maybe they are related.

Treasurer:

J.B., now I remember. We had a somewhat heated discussion right in this room a few years ago; but I also remember a course in Greek mythology I took at Harvard some 20 years ago. Never knew it could come in handy, but I suggest you all read up on Proteus. All I can say is I will bet a hundred to one that the two Steinmetzes are one and the same—any takers?

Suggested Reading

Miller, Floyd, "The Electrical Genius of Liberty Hall", McGraw-Hill Book Co., Inc., 1962.

Adapted from an article that appeared in *Research Management*.

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CHEMTECH

The Innovator's Magazine